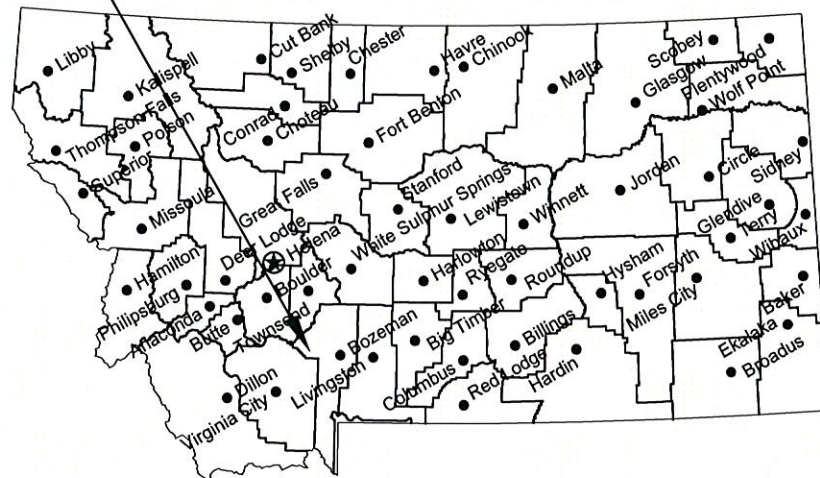


# ROAD AND PARKING IMPROVEMENT GREYCLIFF FISHING ACCESS SITE

LOGAN, MT

FWP # 7133601

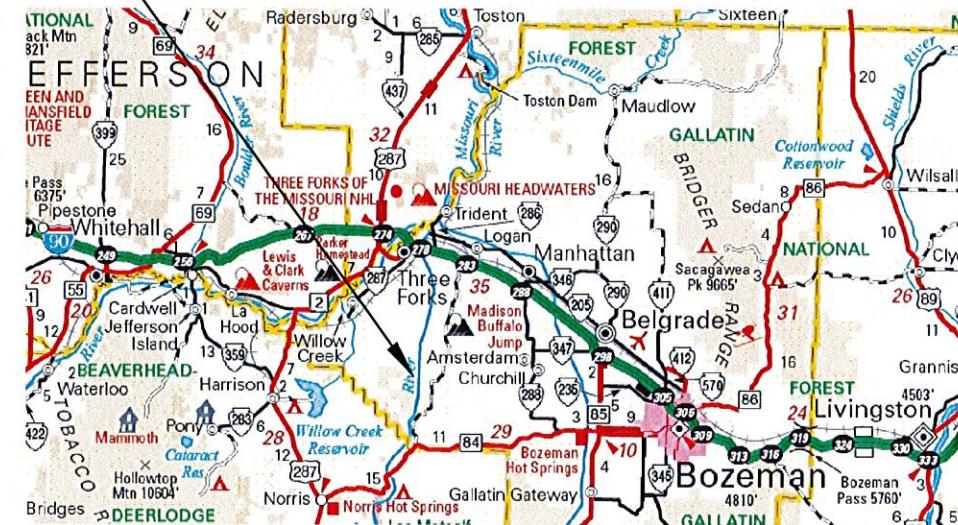
## PROJECT LOCATION



### Location Map

No Scale

## PROJECT LOCATION



### Vicinity Map

No Scale

North



MONTANA FISH, WILDLIFE AND PARKS  
DESIGN AND CONSTRUCTION BUREAU

#### MAILING ADDRESS:

PO BOX 200701  
HELENA, MT 59620-0701

TEL 406.841.4000

FAX 406.841.4004

[fwp.mt.gov/Doing Business/Design&Construction](http://fwp.mt.gov/Doing Business/Design&Construction)

#### PHYSICAL ADDRESS:

1522 9th AVENUE  
HELENA, MT 59601

## DRAWING INDEX

SHEET 1 : COVER  
SHEET 2 : SITE PLAN  
SHEET 3 : TYPICAL SECTIONS  
SHEET 4 : SITE DETAIL  
SHEET 5 : PROFILE PARKING AREA  
SHEET 6 : PARKING AREA SECTIONS  
SHEET 7 : FENCE DETAILS  
SHEET 8 : LATRINE DETAILS



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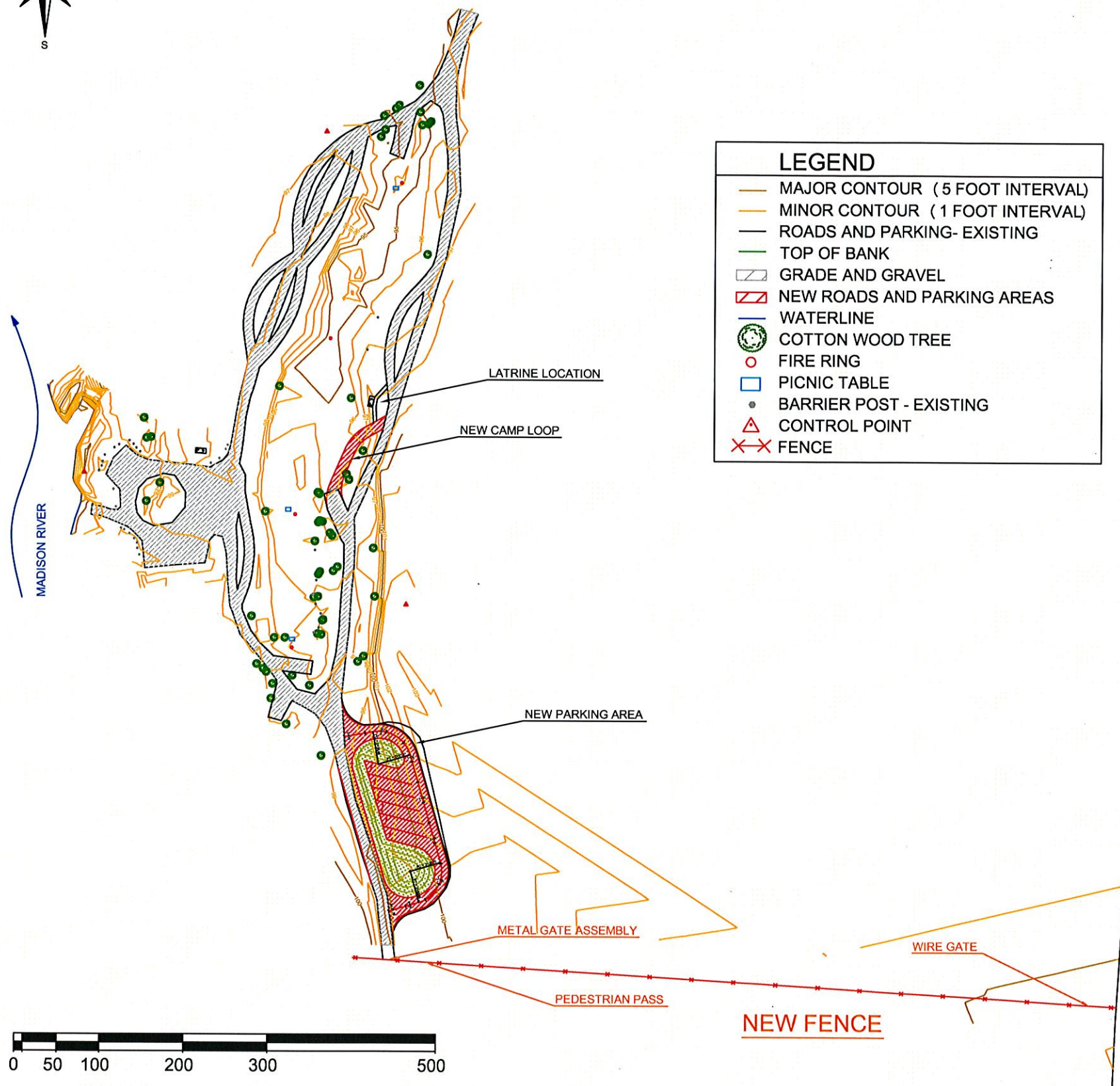
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**COVER**  
GREYCLIFF FAS near LOGAN, MT



SHEET: 1 of 8





## Notes:

- 1) FWP Engineer will stake radius points, parking corners, centerline stations of alignments and provide reference elevations.
- 2) All excess excavated material from the stripping of top soil shall be removed to spoils area, leveled to match natural grades, and seeded. All areas disturbed during construction shall be seeded. Refer to Section 02936. The spoils area will be located on FWP property.
- 3) An existing latrine located on the south end of the site is to be relocated to site near new camp loop. Refer to Sheet 8 and Section 13131. A footpath path 4' x 50' with a 4" depth of crushed gravel shall be constructed as shown on the plan sheet.
- 4) All material removed from the site shall be disposed of in a safe and legal manner.
- 5) Transitions from new graveled areas to vegetated areas shall be uniform, well defined, and follow the alignment of the roads and parking layouts.
- 6) The Contractor shall use best management practices to prevent silt, soil and debris from entering the water. This may include straw, gravel or fabric. Temporary dikes to divert rainwater may be used, provided they are removed and the gravel or soil returned to the original condition. Exposed soil may require straw or similar cover to minimize erosion caused by rain. Other appropriate methods may be used at the Contractors' discretion or as directed by the owner.
- 7) Equipment used in or near water shall not leak fluids. It shall be power washed before use on the site and examined by the engineer.
- 8) Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- 9) The contractor is responsible for locating and protecting utilities within the construction area including access routes to the construction area.
- 10) The contractor is required to notify and coordinate all work activities with the FWP Project Engineer. Public notification of partial site closure may be necessary, and requires a minimum notice of seven days.
- 11) Submittals are required on all products used in the project. refer to specifications for submittal requirements.
- 12) Provide all temporary signing, personnel and traffic control devises as required by federal, state and local regulations.
- 13) Geotechnical Information: The soils at the site are sandy loams stratified with coarse sand and gravel. the depth to a restrictive feature is over 80 inches.
- 14) The Owner is responsible for obtaining all necessary permits.

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4.2014

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**Parks**

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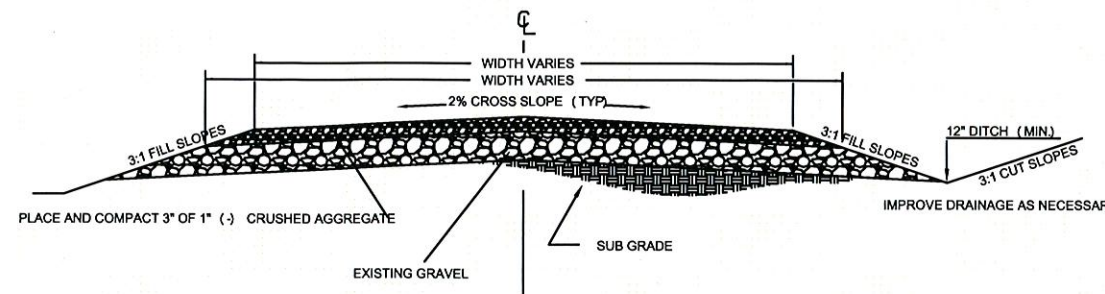
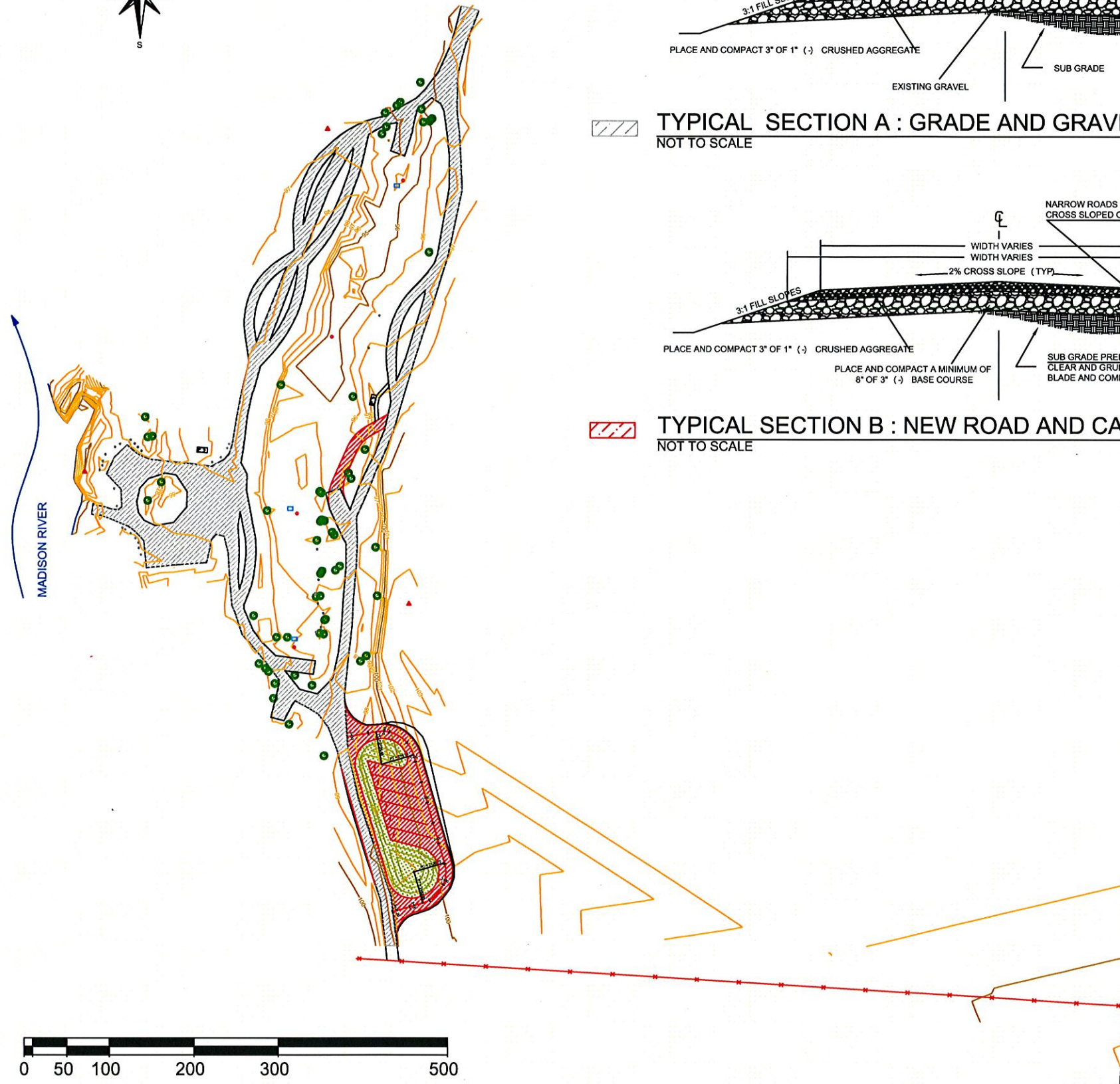
## SITE PLAN

Greycliff FAS near Logan, MT



SHEET: 2 of 8

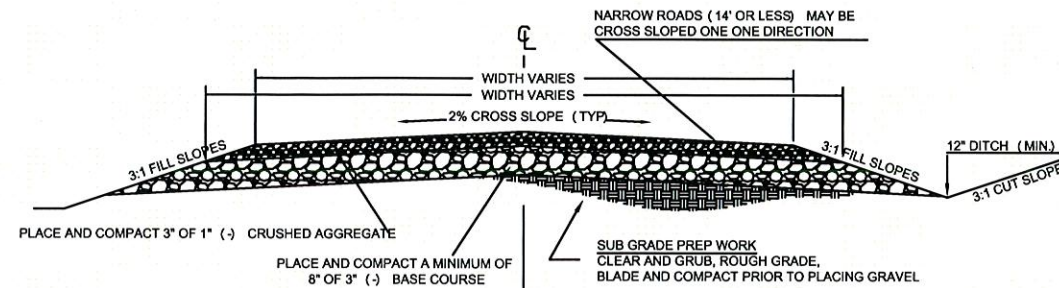




 **TYPICAL SECTION A : GRADE AND GRAVEL EXISTING ROADS AND PARKING AREAS**  
NOT TO SCALE

NOTES:

1. BLADE THE EXISTING ROAD MATERIAL TO DEPTH SUFFICIENT TO REMOVE POTHOLES, WASHBOARDS, RESTORE CROSS SLOPES AND UNIFORM GRADES.
2. IMPROVE THE DRAINAGE DITCHES ADJACENT TO ROADS AS NECESSARY.
4. COMPACT EXISTING GRAVEL SURFACE PRIOR TO PLACING NEW CRUSHED GRAVEL SURFACE.
5. PLACE AND COMPACT 3" OF 1" (-) CRUSHED TOP SURFACING
6. NARROW ROADS (LESS THAN 14') MAY BE CROSS SLOPED IN ONE DIRECTION.



 **TYPICAL SECTION B : NEW ROAD AND CAMPSITES**  
NOT TO SCALE

NOTES:

1. CLEAR AND GRUB AREAS DESIGNATED FOR NEW ROADS AND CAMPING. TOP SOIL DEPTH IS VARIABLE.
2. RETAIN STRIPPED TOP SOIL FOR USE ON BOAT RAMP CUT SLOPE OR PLACE IN AREA DESIGNATED BY FWP ENGINEER.
3. COMPACT EXISTING ROUGH GRADED SURFACE PRIOR TO PLACING NEW GRAVEL BASE COURSE.
4. PLACE AND COMPACT 8" OF 3" (-) BASE COURSE.
5. PLACE AND COMPACT 3" OF 1" (-) CRUSHED TOP SURFACING ON BASE COURSE.
6. NARROW ROADS (LESS THAN 14') MAY BE CROSS SLOPED IN ONE DIRECTION.

**LEGEND**

- MAJOR CONTOUR (5 FOOT INTERVAL)
- MINOR CONTOUR (1 FOOT INTERVAL)
- ROADS AND PARKING- EXISTING
- TOP OF BANK
- GRADE AND GRAVEL
- NEW ROADS AND PARKING AREAS
- WATERLINE
- COTTON WOOD TREE
- FIRE RING
- PICNIC TABLE
- BARRIER POST - EXISTING
- CONTROL POINT
- FENCE

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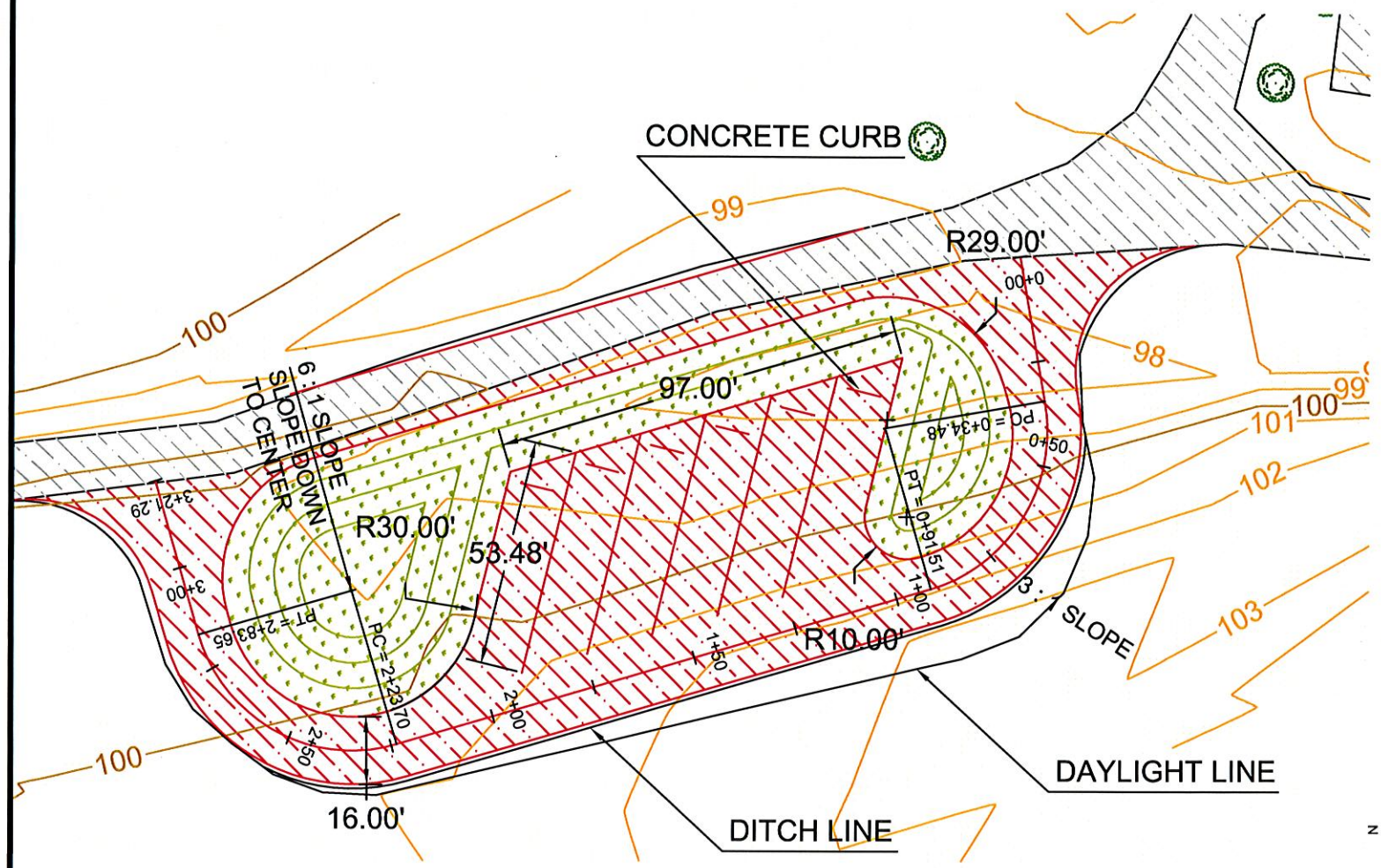
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**TYPICAL SECTIONS**  
Greycliff FAS near Logan, MT



**SHEET:**  
**3**  
**of**  
**8**

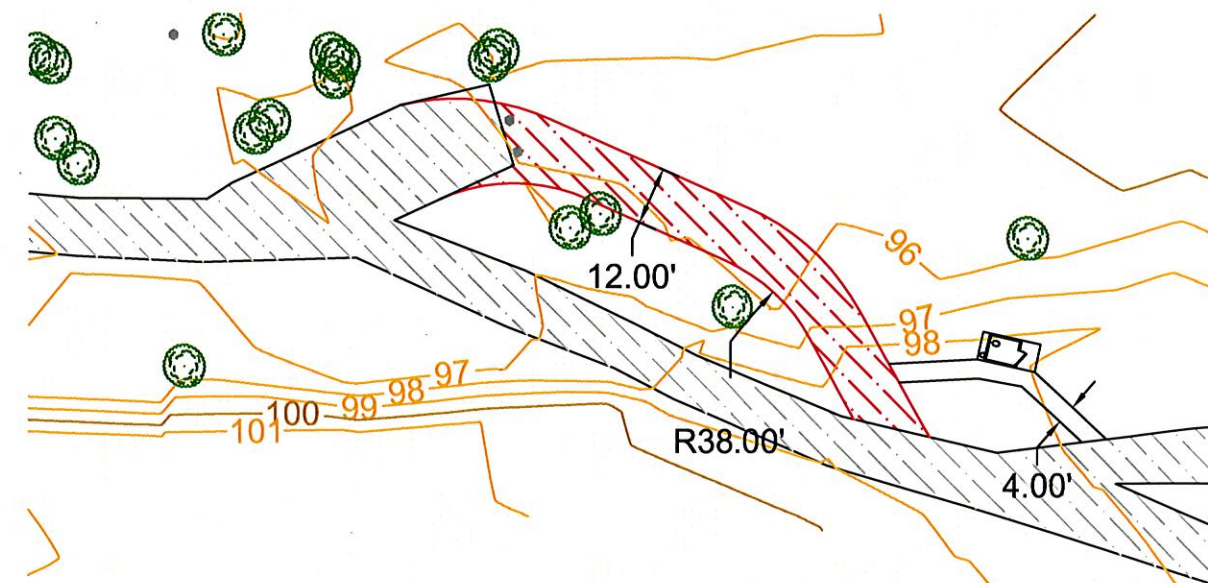




### Notes:

- 1) FWP Engineer will stake radius points, parking corners, barrier locations and provide reference elevations.
- 2) Refer to Typical Sections on Plan Sheet 3.
- 3) All material stripped for new road and parking construction shall be used to seed disturbed areas, or removed to location on site, leveled to match natural grades, and seeded.
- 4) All disturbed areas, including cut slopes, shall be seeded. See Section 02936
- 5) The parking area islands shall be sloped at 6:1 down to center of island and seeded.
- 6) Transitions from new graveled areas to vegetated areas shall be uniform and follow the alignment of the roads and parking layouts.
- 7) Concrete Curb - Supply and install standard concrete pin down curbs. Submit the manufacturer information to FWP Engineer for approval (10) days prior to installation.

LEGEND	
	MAJOR CONTOUR ( 5 FOOT INTERVAL)
	MINOR CONTOUR ( 1 FOOT INTERVAL)
	ROADS AND PARKING- EXISTING
	TOP OF BANK
	GRADE AND GRAVEL
	NEW ROADS AND PARKING AREAS
	WATERLINE
	COTTON WOOD TREE
	FIRE RING
	PICNIC TABLE
	BARRIER POST - EXISTING
	CONTROL POINT
	FENCE



### Notes:

- 1) FWP Engineer will stake radius points, parking corners, barrier locations and provide reference elevations.
- 2) Refer to Typical Sections on Plan Sheet 3.
- 3) All material stripped for new road and parking construction shall be used to seed disturbed areas, or removed to location on site, leveled to match natural grades, and seeded.
- 4) Maintain a uniform grade between existing camp site and road.

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**SITE DETAIL PLAN**  
Greycliff FAS near Logan, MT



**SHEET:**  
4  
of  
8



HIGH POINT ELEV = 100.20

HIGH POINT STA = 0+95.46

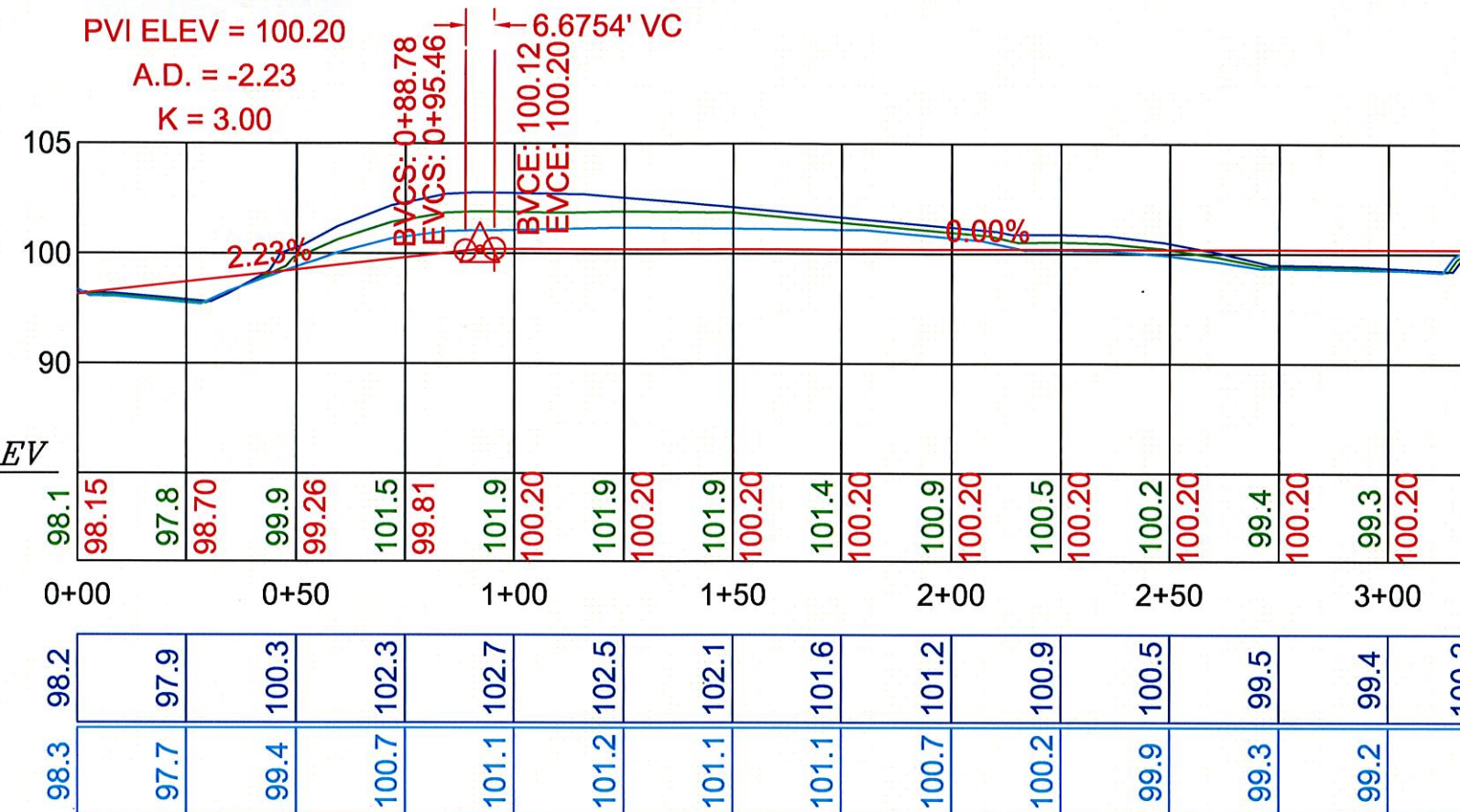
PVI STA = 0+92.12

PVI ELEV = 100.20

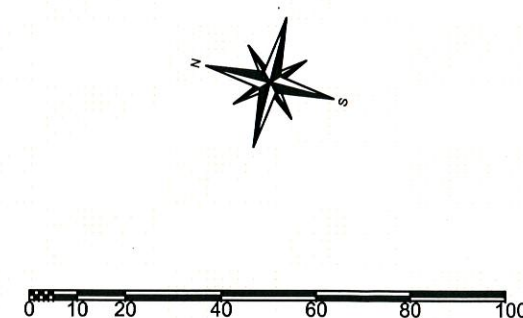
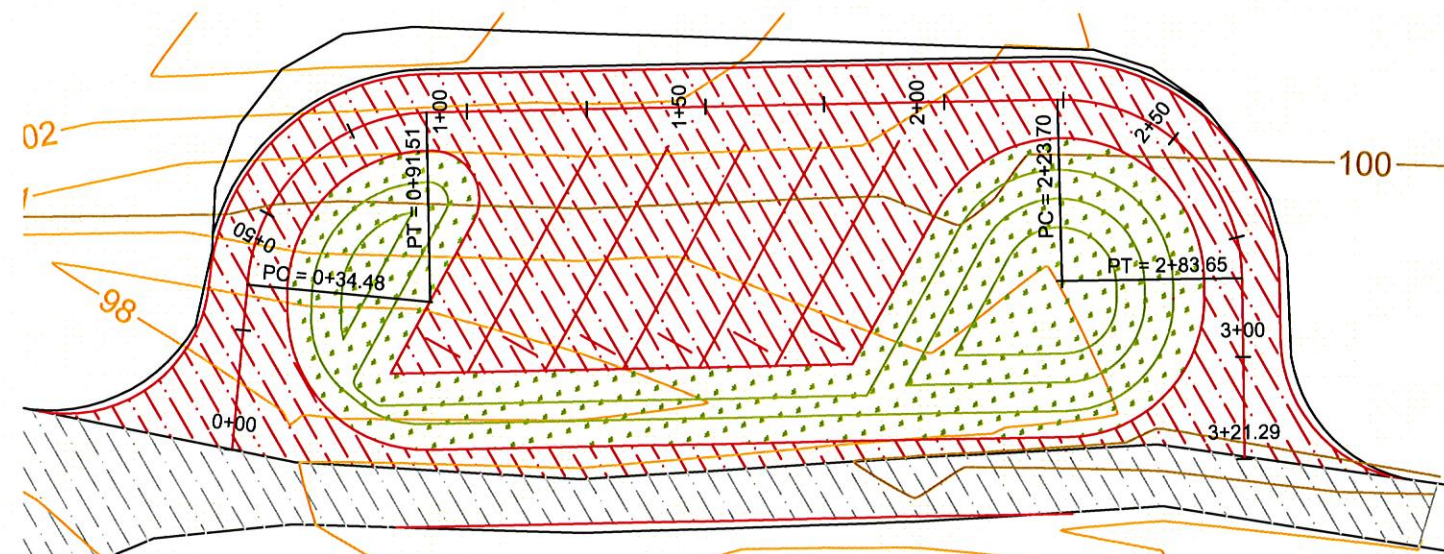
A.D. = -2.23

K = 3.00

DATUM ELEV  
90.00



PROFILE LEGEND	
<span style="color: red;">—</span>	FINISH GRADE - CENTERLINE
<span style="color: green;">—</span>	EXISTING GRADE - CENTERLINE
<span style="color: blue;">—</span>	EXISTING GRADE - 8' LEFT OF CENTERLINE
<span style="color: blue;">—</span>	EXISTING GRADE - 8' RIGHT OF CENTERLINE



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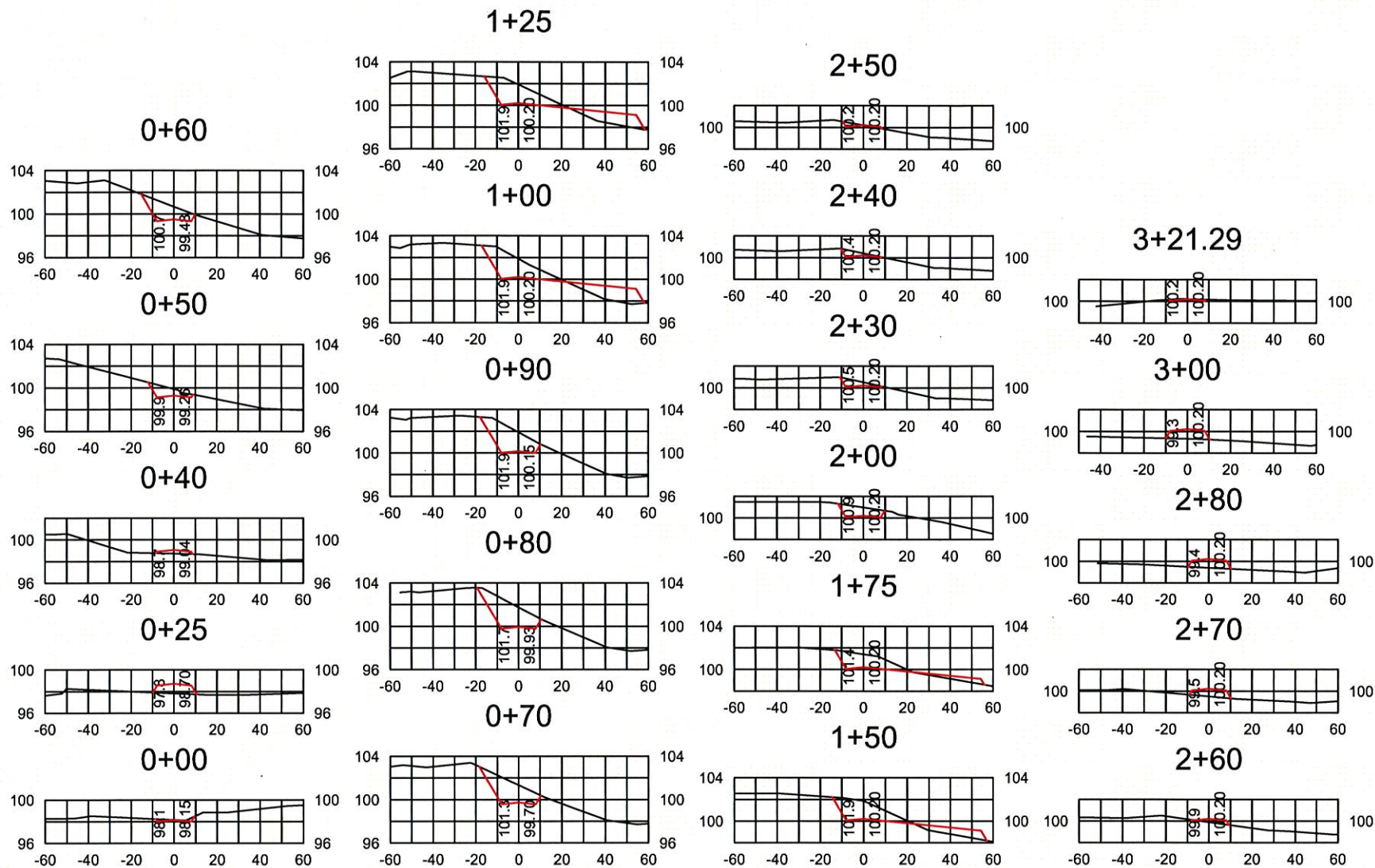
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PROFILE - PARKING AREA  
Greycliff FAS near Logan, MT



SHEET:  
5  
of  
8





CROSS SECTION LEGEND	
<span style="color: red;">—</span>	FINISH GRADE
<span style="color: black;">—</span>	EXISTING GRADE

STATION	AREAS Square Feet		VOLUMES Cubic Yards		CUMULATIVE VOLUMES Cubic Yards	
	CUT	FILL	CUT	FILL	CUT	FILL
0+00	2.00	0.00				
0+25	0.00	14.56	0.92	6.74	0.92	6.74
0+40	0.00	3.92	0.00	5.13	0.92	11.88
0+50	13.08	0.00	2.52	0.72	3.45	12.60
0+60	28.03	0.00	8.27	0.00	11.72	12.60
0+70	41.41	0.00	14.11	0.00	25.83	12.60
0+80	48.48	0.00	18.50	0.00	44.33	12.60
0+90	45.38	0.00	19.36	0.00	63.70	12.60
1+00	48.51	33.33	17.39	6.17	81.08	18.77
1+25	46.98	27.08	44.21	27.97	125.29	46.74
1+50	40.78	18.50	40.63	21.10	165.92	67.84
1+75	32.29	8.08	33.83	12.31	199.74	80.14
2+00	16.15	0.00	22.43	3.74	222.17	83.88
2+30	7.40	0.00	13.09	0.00	235.26	83.88
2+40	5.34	0.00	2.59	0.00	237.84	83.88
2+50	2.00	0.62	1.54	0.11	239.38	83.99
2+60	0.05	4.09	0.45	0.78	239.83	84.77
2+70	0.00	10.82	0.01	2.63	239.84	87.40
2+80	0.00	12.83	0.00	4.30	239.84	91.69
3+00	0.00	14.55	0.00	10.14	239.84	101.83
3+21.29	1.11	0.00	0.44	5.74	240.27	107.57
			0.00	0.00	240.27	107.57

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**PARKING SECTIONS and VOLUME TABLE**  
Greycliff FAS near Logan, MT



SHEET:

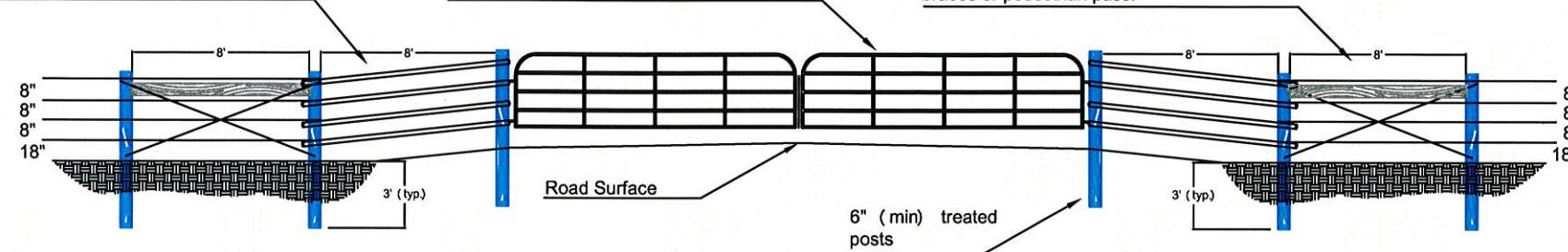
6  
of  
8



Provide 4" min rails between brace panel and gatepost. Fasten to posts with ring shank nail and washer or lag screw. Cope rail to post.

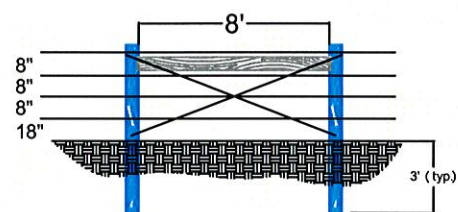
Heavy duty, 16 ga, 14' metal stock gates with chain keeper, hinge gate to swing back to fence, provide hook on the brace rail to tie gate back.

Single panel brace placed in line with existing fence. Tighten and secure existing fence wire. Provide 6" min wood brace and two twist - tightened 9 ga wire cross braces or pedestrian pass.



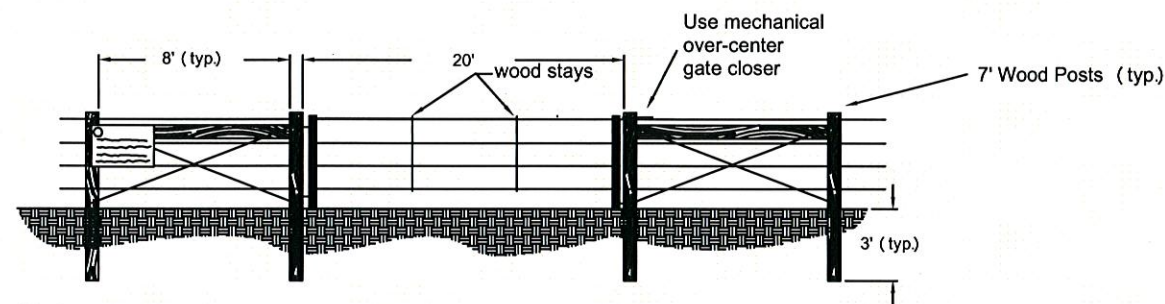
### Metal Gate Assembly

NOT TO SCALE



### Single Panel

\* Top and Bottom Wire to be Smooth, Bottom Wire 18" Above the

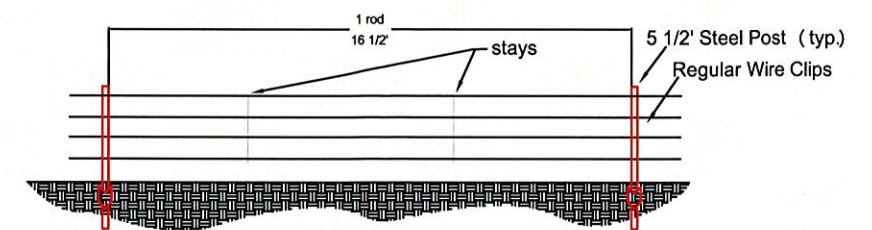


### Gate

\* Top and Bottom Wire to be Smooth, Bottom Wire 18" Above the Ground

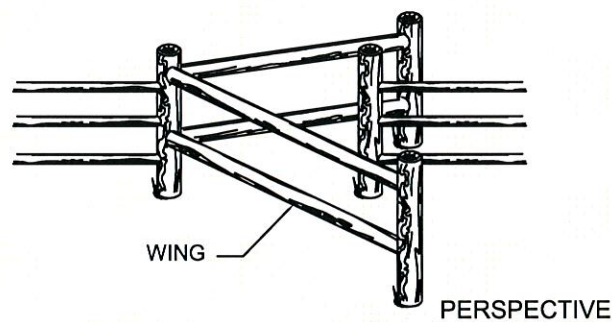
### Estimated Quantities:

1. Single Panel Brace - 2
2. Metal Gate Assembly - 1
3. Pedestrian Pass - 1
4. Wire Gate - 1
5. Total length of fence including braces and gates - 790feet

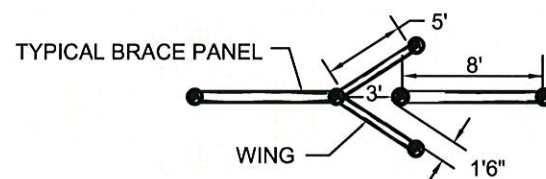


### Typical Steel Post Fence

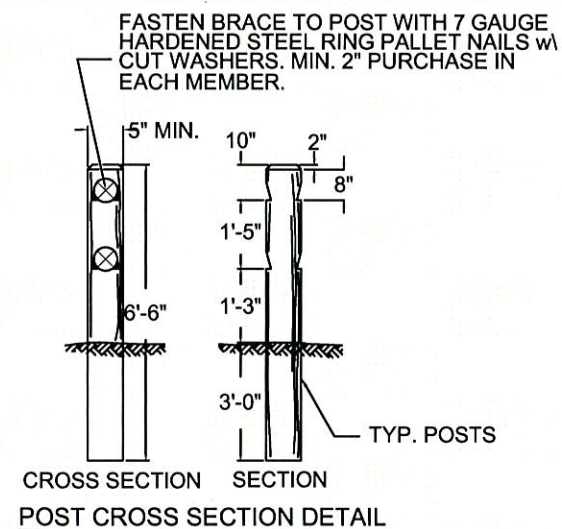
\* Top and Bottom Wire to be Smooth, Bottom Wire 18" Above the Ground



PERSPECTIVE



PLAN VIEW



CROSS SECTION  
SECTION  
POST CROSS SECTION DETAIL



NOTE: BRACE AND POST SHALL FIT TOGETHER SNUGLY. A MIN. OF 60% OF THE END AREA OF THE POLE SHALL BEAR ON THE POST NOTCH. THERE SHALL BE NO GAP GREATER THAN 1/4".

TYPICAL BRACE RAIL

### PEDESTRIAN PASS

NOT TO SCALE

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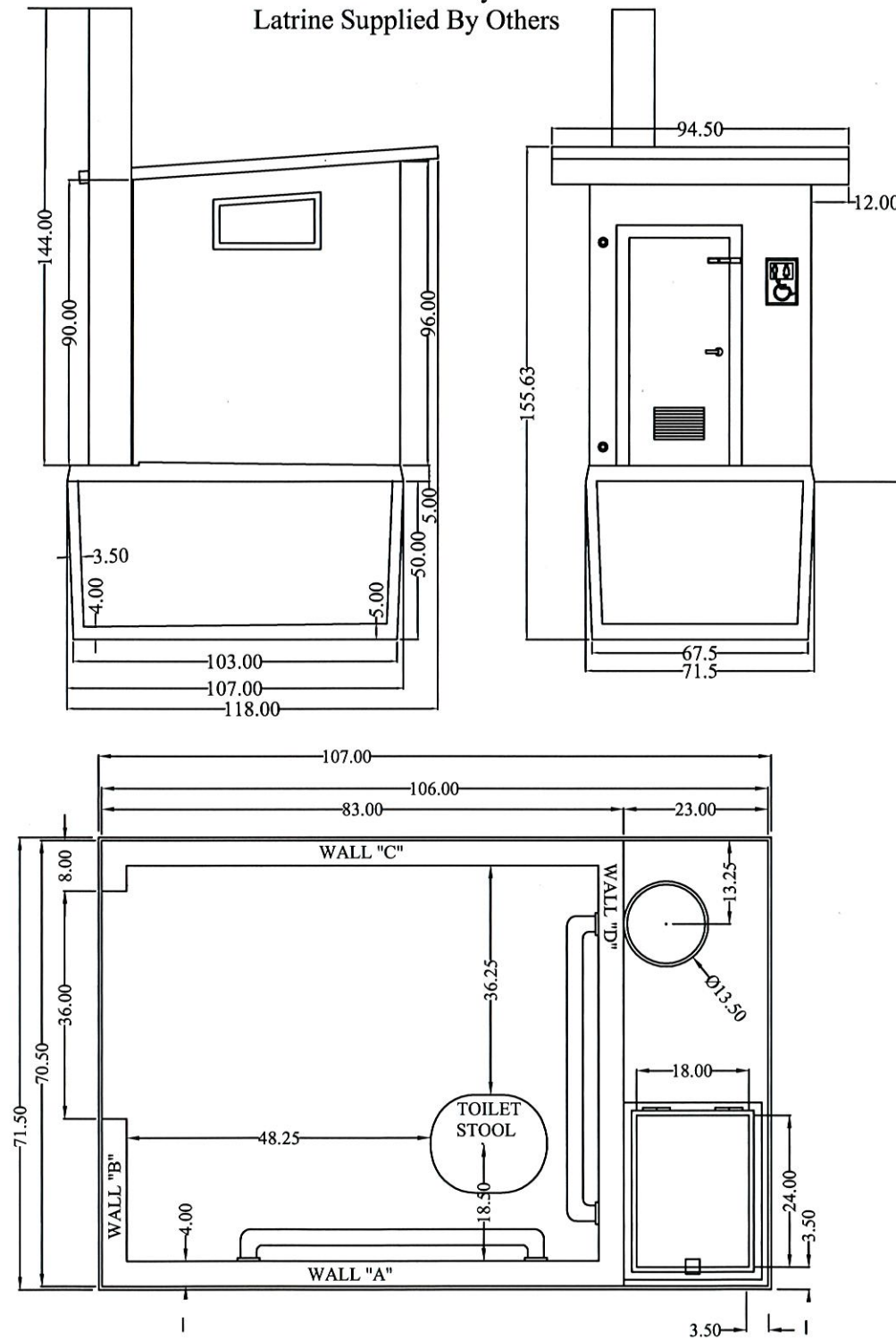
FENCE DETAILS  
Greycliff FAS near Logan, MT



SHEET:  
7  
of  
8



For Information Only  
Latrine Supplied By Others



#### GENERAL

All dimensions are in inches, unless otherwise noted.

#### INSTALLATION

General Installation involves excavation, leveling bottom of hole with drain aggregate, installing latrine, backfilling around latrine and landscaping.

#### EXCAVATION

- Excavate subsoil to a point 12 inches deeper than required for latrine installation.
  - Depth of excavation is 50 inches for the precast latrines manufactured by Flathead Concrete.
  - Finish floor elevation shall be a minimum of 4-6 inches above natural grade measured at the front entrance.
- Minimize over excavation. Stockpile excavated material for later backfilling and landscaping.
- Compact bottom of hole with three passes of mechanical compaction device.

#### LEVELING

- Place and compact approved crushed gravel to a depth of 12 inches.
- Compact leveling material with three passes of compaction device.
- Level base for installation of latrine.

#### LATRINE INSTALLATION

- The precast latrine will be set by the supplier.
- Insure that latrine sits level and plumb when done installing.

#### BACKFILLING

- Place a foot of approved crushed gravel around base of vault and compact.
  - Remove rocks larger than 6 inches in diameter from the fill.
  - Remove branches, roots and other or organic debris in fill.

#### LANDSCAPING

- Slope grade away from latrine.
- Blend fill slope into surrounding terrain and seed.
- Remove surplus fill material.
- Remove soil to a depth of 4 inches beneath location for entrance slab and compact.
- Place four inches of crushed gravel for bedding, level and compact.

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**LATRINE DETAILS**  
Greycliff FAS near Logan, MT



SHEET:

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of  
8